TECHNICAL REVIEW DOCUMENT For OPERATING PERMIT 010PEP239

Tuscarora Incorporated El Paso County Facility ID: 0410307

Prepared by Long B. Nguyen August 1, 2002

1. Purpose

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Colorado Title V Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA, during Public Comment, and for other interested parties. Information in this report is primarily from the application received on September 28, 2001, as well as numerous discussions with the applicant. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short-term emission and production/throughput limits on construction permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12-month total. Note that, if applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the construction permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison to annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Any revisions made to the underlying construction permits associated with this facility, made in conjunction with the processing of this operating permit application, have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

2. <u>Source Description</u>

The Tuscarora facility is a custom-shape molder that molds expandable polystyrene (EPS), similar polystyrene-based polymers (such as T-grade bead), and ARCEL (a polystyrene/polyethylene copolymer) into products for packaging, materials handling, and structural component uses. These polymeric resins are received in bead form, then expanded and fused into molded products through a series of steps. The four major steps involved in this process are: 1) Pre–expansion---partial expansion of raw beads in preparation for molding, 2) Pre-puff storage---aging and storage of the pre-expanded beads prior to molding, 3) Molding---fusing of beads into various shapes, and 4) Storage---warehousing of molded products. The facility falls under the Standard Industrial Classification 3086.

The facility is located at 1100 Garden Of The Gods Road in Colorado Springs, Colorado. This area is designated as an attainment area for all criteria pollutants. Based on the information provided by the applicant, it is not categorized as a major stationary source for PSD applicability purposes (no single criteria pollutant emissions with a Potential to Emit of greater than 250 TPY) as of the issue date of this permit. The source therefore is not subject to the PSD review requirements of 40 CFR 52.21 (Colorado Regulation No. 3, Part B, Section IV.D.3). Future modifications to this facility may result in an exceedance of the major source threshold. Once that threshold is exceeded, future modifications at this facility resulting in a significant net emissions increase (see Reg 3, Part A, Section I.B.37 and 58) for any pollutant as listed in Regulation No. 3, Part A, Section I.B.58 or a modification which is major by itself may result in the application of the PSD review requirements. There are no affected states within 50 miles of this facility, and there are no Federal Class I designated areas within 100 kilometers of the facility. There are no emission points at this facility that use a control device to achieve compliance with an emission limitation or standard to which they are subject and have pre-control emissions that exceed or are equivalent to the major source threshold. Consequently, no emission points are subject to the provisions of the CAM program as set forth in 40 CFR Part 64 as adopted by reference into Colorado Regulation No. 3, Part C, Section XIV. Facility-wide emissions are outlined in the table below:

Facility-Wide Emissions

Pollutant	Potential-to-Emit Emissions (tons/yr)	2000 Actual Emissions (tons/yr)
CO	6.6	0.7
NO _X	20.0	2.8
SO ₂	9.0	0.01
VOCs	170.8	103.1
Single HAP	8.0	0.9
Combined HAPs	20.0	1.1

The equipment at this facility include two boilers, used for the production of steam, and the various equipment used in the foam manufacturing process. The boilers at this facility are designed to combust both natural gas and No. 2 fuel oil. Therefore, the emission limits are based on worst-case emissions for either fuel. The greatest amount of CO and NO_X emissions will be emitted when the boilers are fired with natural gas. The greatest amount of SO_2 emission will be emitted when the boilers are fired with No. 2 fuel oil. The CO and NO_X potential-to-emit emissions are based on both boilers operating for 8760 hours per year on natural gas. The SO_2 potential-to-emit emissions are based on the boilers combusting 345,000 gallons of No. 2 fuel oil, where the oil contains 0.5% sulfur, by weight. The VOCs and HAPs potential-to-emit emissions are based on the enforceable limits that the source has taken for the facility. The actual emissions represent the values that were reported on APENs to the Division for the year 2000.

The facility first received Initial Approval Construction Permit 95EP132 on February 14, 1996. The permit issued was a synthetic minor permit (relative to the operating permit thresholds). To remain a minor source, Tuscarora took federally enforceable limits on the amount of raw materials used in the manufacturing processes. This permit was issued as a Final Approval permit on February 7, 1997. The Final Approval permit had a list of equipment for the manufacturing processes, as an attachment to the permit. The source was not allowed to remove or change any of the equipment in the attachment unless they submitted an application to have the permit modified. The VOCs and HAPs emissions at this facility are dependent upon the amount of raw materials used – they are not dependent upon the number or type of equipment at the facility. Given the nature of the custom foam products manufacturing business, the source had to change the number and type of equipment on a regular basis to meet the market demands. The source requested that the permit be modified to allow this flexibility. On July 23, 1998, the Division issued Modification 1 Final Approval permit for the facility. This permit allowed the source the flexibility to change the number and type of equipment at the facility without a permit modification.

The source submitted an application to the Division on January 26, 2001 to have the permit be modified again. This time, the source wanted to replace the existing Kewanee boiler, rated at 6.2 mmBtu/hr, with the current Johnston boiler, rated at 24.7 mmBtu/hr. There were also some other minor changes in the emissions on the Modification 2 Final Approval permit. After this modification, the facility still maintained its minor source status. The Division issued the Modification 2 Final Approval permit on February 5, 2001. On March 23, 2001, the source submitted another application to have the permit be modified. This time, the source requested an increase in the VOCs emissions from 97.81 tons year to 170.8 tons per year. The new emission limit of 170.8 tons per year has been incorporated into the operating permit. All the other criteria pollutants and the HAPs emissions were still below the operating permit thresholds. Because of the VOCs emissions, the source was required to get an operating permit for this facility. The source submitted the operating permit application to the Division on September 28, 2001.

In the operating permit, the source will demonstrate compliance with the annual emission limits for CO, NO_X and SO₂ by tracking the fuel usage and performing emission calculations. The VOCs and HAPs emissions will be based on mass balance. Any exceedances of annual limits will result in the source being out of compliance with the terms and conditions of the operating permit. The source will submit Monitoring and Permit Deviation Reports semi-annually and Compliance Certification Reports annually.

3. <u>Emission Sources</u>

The following emission sources are specifically regulated under the terms and conditions of the operating permit for this facility.

E001 – Foam Product Manufacturing Processes

- **a.** Applicable Requirements The applicable requirements for this emission point are found in Colorado Regulations No.1 and No.3. This emission point is not subject to any specific federal regulations, such as the New Source Performance Standards (NSPS) or the Maximum Available Control Technology (BACT) regulations. The applicable requirements for this emission point are the emission limits for VOCs, single HAP, and combined HAPs. In the Final Approval construction permit, the combined HAPs limit was 24.0 tons per year. This value was changed to 20.0 tons per year in the operating permit. According to the Division's PS Memo 97-1, a source that wants to remain a synthetic minor source for total HAPs must be permitted at 20.0 tons per year or less. If the source wants to be permitted at any level greater than this, then they will be required to track HAPs emissions from all insignificant activities. In the absence of any credible evidence to the contrary, this emission point is assumed be in compliance with the 20% opacity limit because the emissions are VOCs.
- **b.** Emission Factors The VOCs and HAPs emissions are based on mass balance. The source has a computer program called Facility Information Tracking System (FITS) that tracks all of the VOCs and HAPs emissions for the entire facility. This program tracks the emissions on a daily, monthly, and rolling 12-month basis. Some of the parameters that must be entered into this program are the bead code, the bead type, the lot number, the VOC percent, and the amount of material processed. A detailed description of FITS is included in Attachment G of the operating permit.
- **c. Monitoring and Compliance** The source will use FITS to track the VOCs and HAPs emissions to demonstrate compliance with the rolling 12-month limits. The source certified in the operating permit application that this emission point is currently in compliance with the applicable requirements.

E002 – Two (2) Johnston Boilers

a. Applicable Requirements – This emission point contains two Johnston boilers. The smaller boiler is rated at 12.3 mmBtu/hr and the larger boiler is rated at 24.7 mmBtu/hr. At this point, the 24.7 mmBtu/hr boiler provides enough steam for all of the manufacturing processes that occur at the facility. The 12.3 mmBtu/hr boiler is a backup unit. The boilers are designed to be fired with both natural gas and No. 2 fuel oil. However, natural gas is the primary fuel and No. 2 fuel oil will be used only during periods of natural gas curtailment. The requirements that are applicable to these boilers are the fuel consumption limits (both natural gas and No. 2 fuel oil), the emission limits for the various types of pollutants (SO₂, NO_x, and CO), the PM emission standard defined by the equation in Regulation No. 1, Section III.A.1.b, and the SO₂ emission concentration limit in Colorado Regulation No.1, Section VI.B.4.b.i. In addition to the applicable requirements above, the boilers are also subject to NSPS, Subpart Dc regulations. One of the requirements from Subpart Dc is for the source to submit semiannual reports to the Division. These semi-annual reports must include the following information: 1) a certified statement signed by the owner or operator of the affected facility that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period, 2) the name of the distillate oil supplier, and 3) a statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in §60.41c.

The natural gas limit in the operating permit is based on both boilers operating on a continuous basis. If the boilers are to operate on No. 2 fuel oil, they can run for only approximately for 927 hours per year (each boiler) with the current permit limit for No. 2 fuel oil. The emission limits for SO₂, NO_x, and CO in

the operating permit are slightly different from those that are in the construction permit. The table on the following page compares these differences.

Emission Limits Comparison

Pollutant	Construction Permit Limits (tons/yr)	Operating Permit Limits (tons/yr)
SO ₂	3.6	9.0
NO _X	20.8	20.0
СО	6.0	6.6

In the construction permit, the SO_2 emission limit is based on an emission factor of 29.4 pounds of SO_2 per 1000 gallons of No. 2 fuel oil combusted. This emission factor is from the manufacturer. In the operating permit, the SO_2 emission factor is 0.521 lb/mmBtu (the heat value of the No. 2 fuel oil is assumed to be 140,000 Btus/gallon). This emission factor is also from the manufacturer, but it represents the most current emission factor. The 0.521 lb/mmBtu emission factor is based on worst-case fuel sulfur content of 0.5%, by weight. This is because NSPS, Subpart Dc allows only fuel with sulfur content of 0.5% or less to be combusted in the boiler. The SO_2 emission limit of 9.0 tons per year is based on a fuel usage of 245,000 gallons per year and the above emission factor and assumptions. The NO_X and CO emission factors are from the manufacturer, and they are the same in the construction permit and the operating permit. Therefore, the emission limits for NO_X and CO should be the same for the construction permit and the operating permit. This is not the case. A permit file review was done and the file showed that the construction permit engineer did not perform emission calculations to establish the permit limits. Instead, the engineer assumed that the calculations performed by the source were correct and the calculated limits were put in the permit. It is most likely that the source made calculations errors when they performed the original calculations.

The PM emission limit found in Regulation No. 1, Section III.A.1.b is defined by the following equation:

 $PE = 0.5(FI)^{-0.26}$

PE = Particulate matter emissions in pounds per million Btu heat input

FI = Fuel input in million Btu per hour

By substituting the heat inputs of the two boilers into the equation above, the limits are 0.26 lbs/mmBtu (smaller boilers) and 0.22 lb/mmBtu (larger boiler). The source can demonstrate compliance with this PM emission concentration limits by comparing the emission factors from the manufacturer to the emission limits as follows:

1) Johnston Boiler, rated at 12.3 mmBtu/hr

Natural gas: 0.001 lb/mmBtu << 0.26 lb/mmBtu

No. 2 fuel oil: 0.005 lb/mmBtu << 0.26 lb/mmBtu

2) Johnston Boiler, rated at 24.7 mmBtu/hr

Natural gas: 0.001 lb/mmBtu << 0.22 lb/mmBtu

No. 2 fuel oil: 0.005 lb/mmBtu << 0.22 lb/mmBtu

The boilers are subject to the SO_2 concentration limit of 0.8 lb/mmBtu (3-hour rolling average) (Colorado Regulation No.1, Section VI.B.4.b.i.). The emission factors are based on the sulfur content of the fuel, as can be seen in the table below. The data in the table can be interpolated to show that a sulfur content of 0.75% will assure compliance with the 0.8 lb/mmBtu limit. The boilers will meet the 0.8 lb/mmBtu limit because Subpart Dc limits the sulfur content of the fuel to only 0.5%.

No. 2 Fuel Oil Emission Factors

Sulfur Percent (%)	SO ₂ Emission Concentration (lb/mmBtu)	
0.2	0.208	
0.4	0.417	
0.6	0.625	
0.8	0.833	
1.0	1.042	
The emission factors are from the Johnston Boiler Company's website as of October 25, 2001.		

b. Emission Factors – The emission factors for the two boilers are identical. These emission factors are from the Johnston Boiler Company's website, as of October 25, 2001. The only emission factor that is not from the manufacturer is the SO₂ emission factor for natural gas. This emission factor is from AP-42 (March 1998). The table on the previous page and the table below summarize the emission factors that will be used in the emission calculations for both types of fuel. For the No. 2 fuel oil, the source will have to interpolate between the values in the table if the actual sulfur content of the No. 2 fuel oil does not match exactly with a value in the table.

Permit Emission Factors

Pollutant	Natural gas (lbs/mmBtu)	No. 2 fuel oil (lbs/mmBtu)
СО	0.04	0.04
NO _X	0.12	0.2
SO ₂	0.0006	See table above

All emission factors, except for natural gas, are from the Johnston Boiler Company's website as of October 25, 2001. The SO_2 emission factor for natural gas is from AP-42, version March 1998.

A comparison was made between the manufacturer's emission factors and the latest AP-42, Section 1.4 emission factors. For natural gas, the CO and NO_X emission factors from AP-42 (March 1998) were 0.084 lb/mmBtu and 0.28 lb/mmBtu, respectively. These factors are greater than the manufacturer's factors of 0.04 lb/mmBtu and 0.12 lb/mmBtu. For No. 2 fuel oil, the SO_2 emission factors from the manufacturer and AP-42 (September 1998) were similar. In some cases, the Division requires the owner/operator to verify the manufacturer's emission factors with a stack test, if the manufacturer's emission factors are less than AP-42 emission factors and if the owner/operator wants to use the manufacturer's emission factors for compliance purposes. The Division believes that a stack test is not necessary, in this case, because the boilers are rated only at 27.4 mmBtu/hr and 12.3 mmBtu/hr.

c. Monitoring and Compliance – The source will track the type and amount of fuel used by both boilers. In addition, the source will analyze the heat content of the natural gas on a semi- annual basis. The sulfur content and the heat content of the No. 2 fuel oil will be determined on each shipment of fuel received at the facility. This information will be used in the calculations of the emissions to demonstrate compliance with the rolling 12-month emission limits. If the boilers are fired with No. 2 fuel oil, the source will be required to perform opacity readings to demonstrate compliance with the 20% opacity limit. The opacity reading requirements are only applicable when the boilers are in actual operation. The Division is aware that the boilers may be started periodically to ensure that they can operate on No. 2 fuel oil when the situation arises. Therefore, the source will not be required to perform opacity readings during these startup tests. The source certified in the operating permit application that the boilers are currently in compliance with the applicable requirements.

4. <u>Insignificant Activities</u>

The following is a list of insignificant activities that was provided by the source to assist in the understanding of the facility layout:

- 1. QA/QC laboratory, for volume displacement and item dimensional checks only.
- 2. Small storage tanks holding water treatment chemicals for addition to the boilers when needed.
- 3. Landscaping and housekeeping devices including one (1) eight horsepower snow blower and one (1) kerosene-fired steam cleaner.
- 4. Chemical storage area holding boiler water treatment chemicals in small, closed containers, such as pails and drums. Used oil also stored in 55-gallon drums.
- 5. Five (5) gas-fired space heaters (two @ 92,000 Btu/hr, two @ 59,200 Btu/hr, and one @ 65,600 Btu/hr).
- 6. De minimis air pollution unit: KBM Maxi re-grinder. This unit grinds scrap foam product for re-use in the process or for disposal. A bag filter prevents dust emissions, and the unit exhausts inside the facility.

5. Alternative Operating Scenarios

Boilers E002 and E003 have an alternative operating scenario to burn No. 2 fuel oil during periods of natural gas curtailment.

6. Permit Shield

The source did not request any specific permit shields for this facility in the operating permit application.

7. Accidental Release - 112(r)

Section 112(r) of the Clean Air Act mandates a federal focus on the prevention of chemical accidents. Sources subject to these provisions must develop and implement risk management programs that include hazard assessment, a prevention program, and an emergency response program. They must prepare and implement a Risk Management Plan (RMP) as specified in the Rule. The source certified in the operating permit application that this facility is not subject to the Section 112(r) of the Clean Air Act.